

really effective means in organized medicine to study them in any sort of depth, or to develop realistic policies that will recognize the need to find an accommodation between such conceptual opposites which impinge upon physicians and patient care. It is unlikely that problems such as these can be solved by medicine alone, but neither can they be solved without medicine's leadership and the support of public opinion. It is not too early for the medical profession, through its leadership, to begin to think through some of these conceptual issues and then, perhaps in concert with others, to develop policies to deal more effectively with some of the practical problems that are even now at hand.

—MSMW

Mount Olympus Revisited

TO THE ANCIENT GREEKS, Mount Olympus was the abode of the gods, and any mortal venturing there did so at his peril. Although our appreciation of the hazards of mountainous regions has changed over the centuries, respect and caution are still advisable. Not only are the terrain and weather often hostile, but there are the added hazards posed by the inescapable hypoxia resulting from the lower atmospheric pressure at high altitude. Elsewhere in this issue, Hultgren has dealt with these hazards in his excellent review of high altitude medical problems. Very properly, the reader is confronted with the reality that life-threatening altitude sickness can develop at elevations no higher than 9,000 feet, and that millions of Americans enter this danger zone each year when they visit our Western mountains. Altitude sickness is not a medical curiosity encountered only by foolhardy climbers at extreme altitudes in remote corners of the world. It is a potential threat to average tourists on vacation in the Rockies or the Sierras. Fortunately, the incidence of serious problems is low, but physicians must be aware of the problems that may arise.

A persons driving into the mountains is exposed to a progressively lower atmospheric pressure. Although the concentration of oxygen remains constant at 21 percent, the partial pressure of oxygen falls as the total atmospheric pressure decreases. It is this atmospheric hypoxia that disturbs the mechanisms of oxygen transport in the body, and initiates the normal processes of adap-

tation. During this transition from normoxia to hypoxia, acute mountain sickness (AMS) appears. No underlying disease process is involved. However, the exact pathogenesis of AMS is poorly understood, and the basis for individual variability is unknown. Hence, the physician's approach must be that AMS may develop in anyone, and the likelihood is enhanced the greater and more rapid the change in altitude—that is, the greater and more abrupt the hypoxic stimulus. As Hultgren emphasizes, the most effective way to avoid AMS, therefore, is to make the ascent gradual.

Americans always seem to be in a hurry, and many will simply not heed the advice of gradual ascent. They will fly to Denver (5,300 feet), rent a car and in a matter of hours be at a mountain resort area such as Keystone (located at 9,300 feet elevation). Predictably, half of these people will suffer some degree of AMS.¹ While more gradual ascent will reduce the incidence of AMS, in some persons symptoms will still develop. Realistically, then, a certain amount of AMS is inevitable. Fortunately, most cases of AMS are self-limiting. However, it is those persons with AMS whose conditions progressively deteriorate who are at serious risk. We must educate the public in recognizing this latter situation.

Hultgren presents definitive descriptions of the various forms of AMS, including high altitude pulmonary edema (HAPE) and cerebral edema. These are based on his long-standing interest, his research and his extensive firsthand experience treating patients with AMS both in the Sierras and in the Andes. There is uniform agreement that the most reliable form of treatment of AMS is prompt descent. Furthermore, descent should be initiated at the first indication that the person's condition is deteriorating rather than showing the usual spontaneous improvement. To wait and see if the person's condition will get worse can convert an ambulatory patient to one who must be carried, and such delays have proved fatal. Since the initiating cause of AMS is atmospheric hypoxia, the ultimate goal of therapy is relief of hypoxia. Hence, supplemental oxygen is useful. However, Hackett, Rennie and Levine have reported that in treating patients with AMS at 14,000 feet, descent to 11,000 feet produced dramatic improvement whereas supplemental oxygen at the higher altitude did not.²

Paradoxically, high altitude natives are not immune to AMS, as Hultgren points out. In fact, such natives may have an exaggerated suscepti-

bility to HAPE after a sojourn at low altitude as brief as one or two days.³ Some aspect of their long-term acclimatizations appears to be lost rapidly, rendering them vulnerable upon reascent to their home environment. It is true, as Marticorena and Hultgren⁴ have reported recently, that high altitude natives in whom HAPE develops upon reascent can be treated effectively while remaining at high altitude with oxygen and rest, or perhaps even bed rest alone. However, such high altitude natives differ physiologically from unadapted lowlanders. I have observed trekkers with HAPE at 14,000 feet whose conditions did not improve with rest and supplemental oxygen for 48 hours, and in whom improvement occurred only when helicopter evacuation became available. Consequently, we should be cautious in extrapolating experience gained from high altitude natives when confronted with a lowlander with AMS. Prompt descent remains the most reliable form of treatment, and prevention the ultimate goal.

With ever-increasing numbers of visitors to the high altitude regions of the world, the medical problems of high altitudes will become more frequent and more familiar. We must consider not only those millions seeking recreation in the mountains, but also those persons who are taking up residence at high altitude for such industrial purposes as oil shale development, mining of molybdenum above 12,000 feet and construction of the Eisenhower tunnel at 11,300 feet under Loveland Pass in Colorado, as well as the families of such workers who populate communities like Leadville, Colorado, at 10,200 feet. From pregnant women to infants to the elderly with poor health, long-term residence at high altitude poses another set of medical problems which we are only beginning to appreciate, much less understand. The review by Hultgren in this issue is indeed timely.

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REFERENCES

1. Anholm JD, Houston CS, Hyers TM: The relationship between acute mountain sickness and pulmonary ventilation at 2,835 meters (9,300 ft.). *Chest* 75:33-36, 1979
2. Hackett PH, Rennie D, Levine HD: The incidence, importance, and prophylaxis of acute mountain sickness. *Lancet* 2: 1149-1154, 1976
3. Scoggin CH, Hyers TM, Reeves JT, et al: High altitude pulmonary edema in the children and young adults of Leadville, Colorado. *N Engl J Med* 297:1269-1272, 1977
4. Marticorena E, Hultgren HN: Evaluation of therapeutic methods in high altitude pulmonary edema. *Am J Cardiol* 43: 307-312, 1979

Lessons From Skull Films

THE BRIEF REPORT "Skull Radiography and Professional Liability" which appears elsewhere in this issue has obvious lessons which illustrate its title. A skull film reported as normal may not be, or it may be apparently normal but fail to disclose a significant abnormality that actually is present—with all the risks that this implies for both patient and physician. This is evident enough. But there are other lessons to be extracted from this simple report. For example, a less expensive procedure, such as making a roentgenogram of the skull, may not be as cost-effective as one that is more expensive, such as computerized tomography. This fact may make the use of less costly and less effective procedures unnecessary, or prevent delays in diagnosis which may in turn add, perhaps tragically, to the disability and the cost. In the cost conscious times we are in, there is need for more attention to actual cost benefits, as more sophisticated and more expensive techniques become available to practicing physicians. And another lesson is that perhaps it is time to review and update our thought processes in patient care, to question some of the stereotypes of practice (a skull film will reassure the patient and provide some legal protection for the physician) and to reexamine what we are doing and why we are doing it—particularly when science and technology make available new, though perhaps more expensive, approaches to medical care.

—MSMW

Implications of Successful Combination Chemotherapy for Testicular Germ Cell Neoplasms

ELSEWHERE IN THIS ISSUE Einhorn and Williams outline their chemotherapy results for recurrent and metastatic testicular germ cell neoplasms. Results of their trials¹ as well as those of others² have significantly altered the prognosis of patients with such tumors. It is important to place these advances in perspective and examine their implications in terms of the overall approach to germ cell neoplasms.